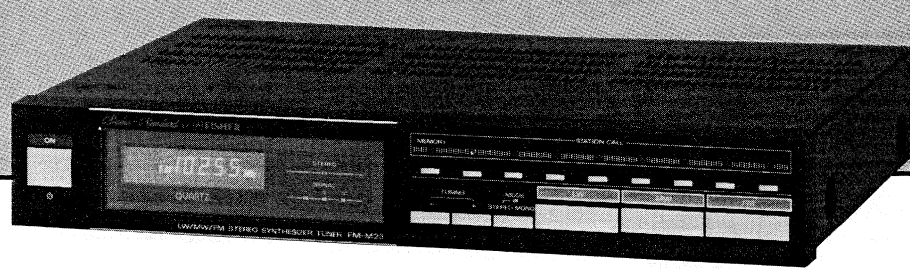
SERVICE MANUAL

FISHER

FM-M23

LW/MW/FM Stereo Synthesizer Tuner

(EUROPE)



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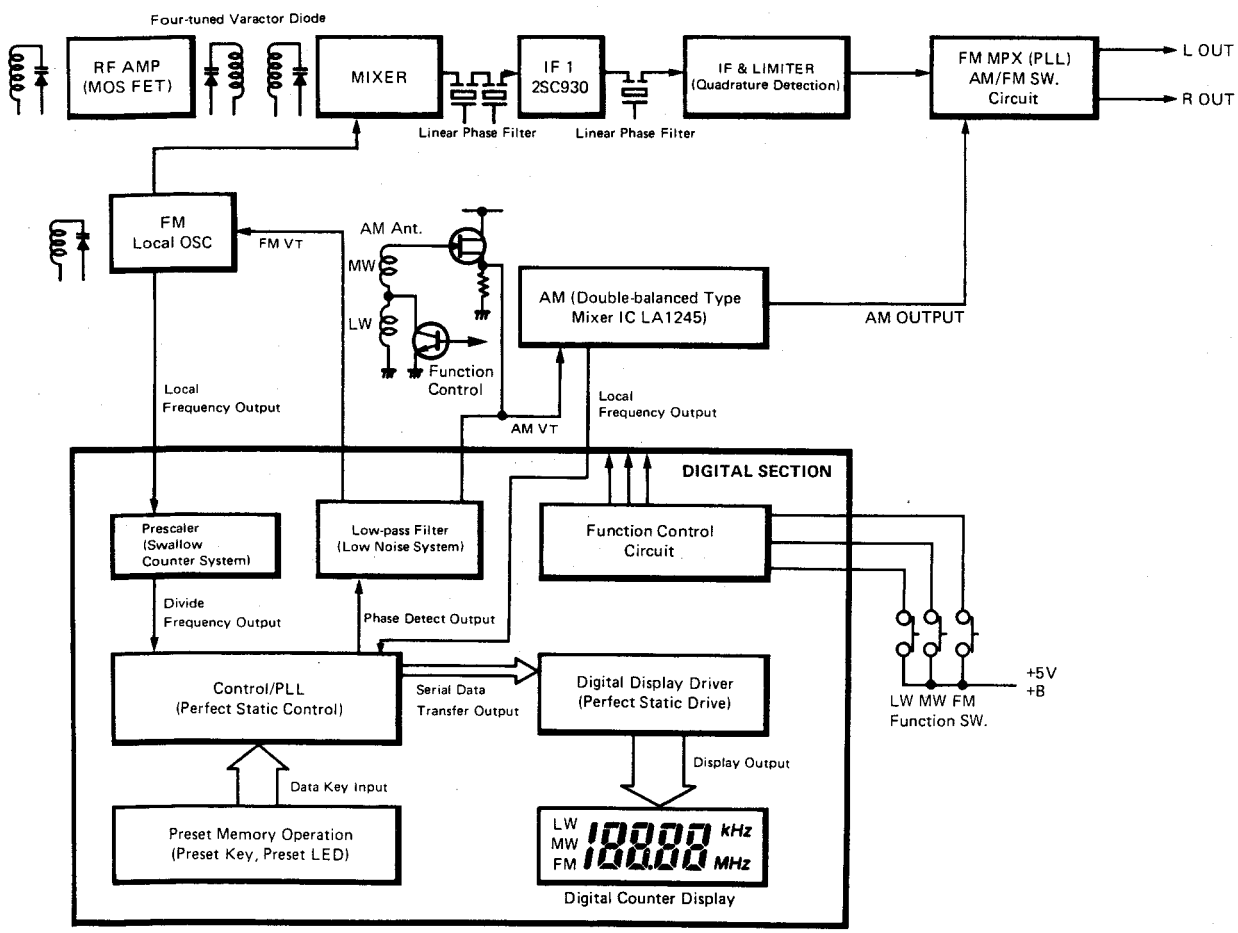
FUNCTIONAL BLOCK DIAGRAM

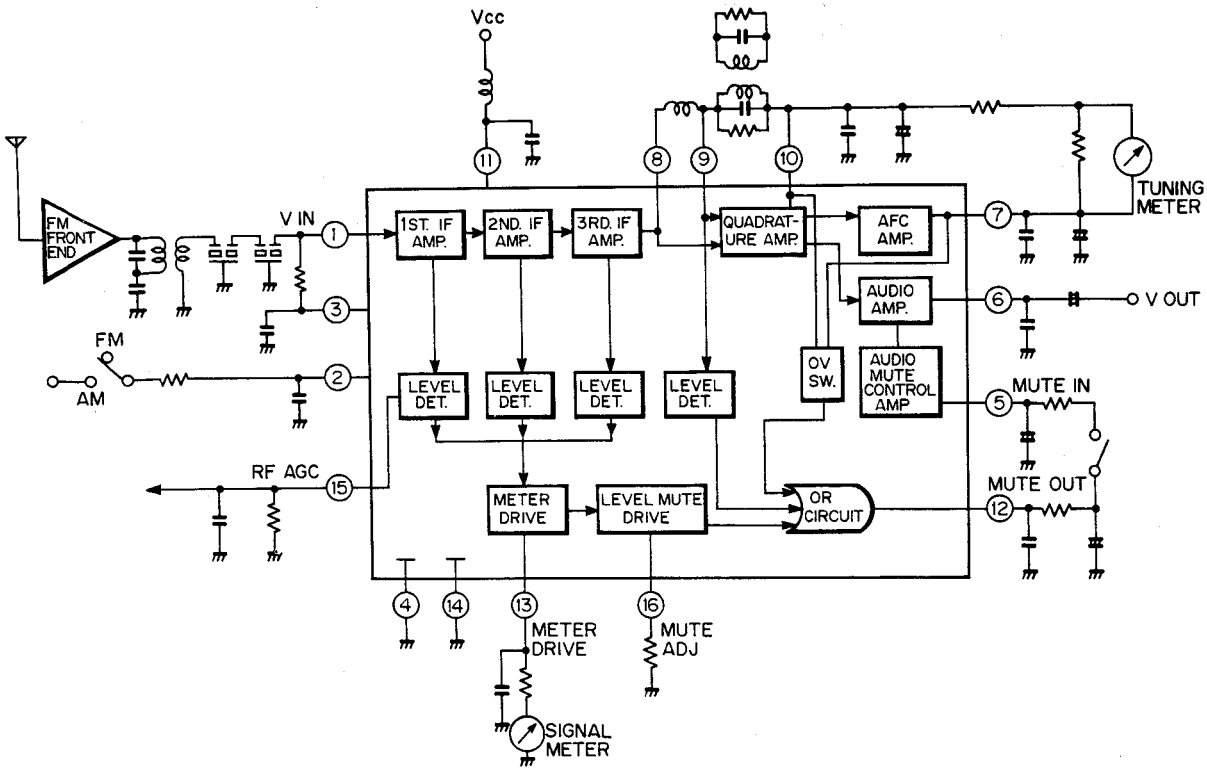


SPECIFICATIONS

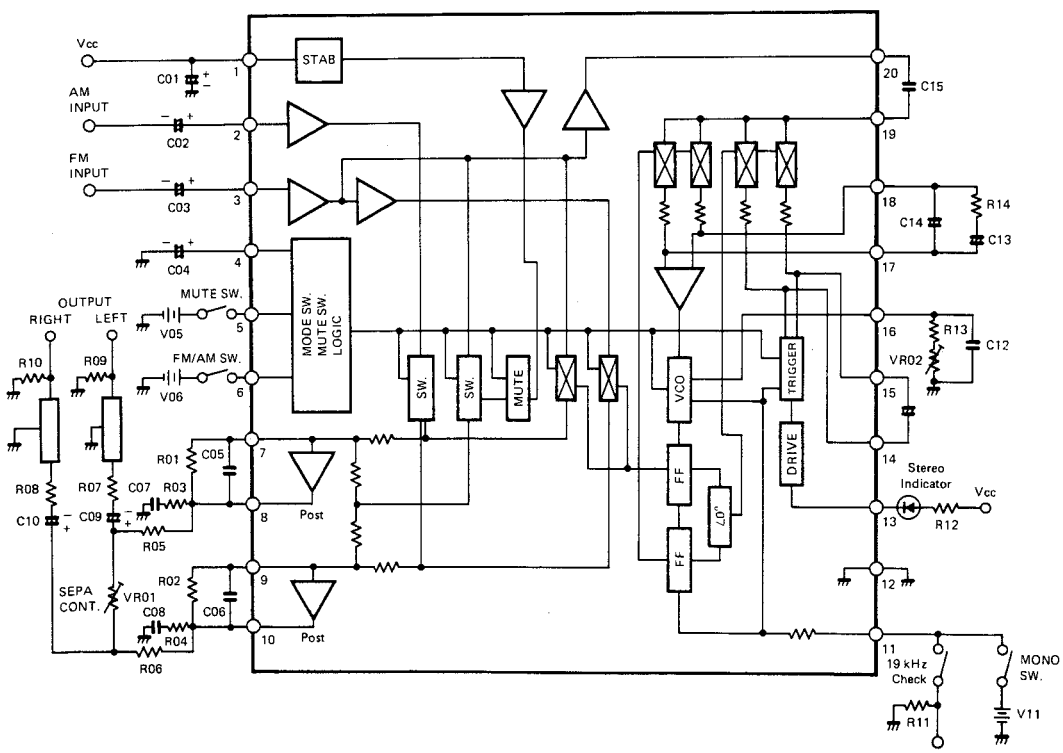
LW/MW/FM STEREO TUNER	FM-M23	
FM SECTION		
Usable Sensitivity (DIN) Mono	1.2 μV/12.83 dBf	
46 dB Quieting Sensitivity Mono	3.2 μV/21.35 dBf	
Stereo	23 μV/38.48 dBf	
Signal-to-Noise Ratio Mono	70 dB	
Stereo	65 dB	
Capture Ratio	1.5 dB	
Alt. Channel Selectivity (±400 kHz)	65 dB	
Image Response Ratio	60 dB	
Spurious Response Ratio	80 dB	
IF Response Ratio	100 dB	
AM Suppression Ratio	50 dB	
Total Harmonic Distortion at 46 dB Quieting Mono	0.4 %	
Stereo	0.5 %	
Total Harmonic Distortion at 65 dBf Mono (100 Hz/1 kHz/6 kHz)	0.1/0.1/0.2 %	
Stereo (100 Hz/1 kHz/6 kHz)	0.2/0.1/0.1 %	
Stereo Separation (100 Hz/1 kHz/10 kHz)	45/45/25 dB	
Sub-Carrier Rejection (19 kHz/38 kHz)	65/75 dB	
Audio Frequency Response (20 Hz – 15 kHz)	±1.0 dB	
AM SECTION	**MW**	**LW**
Usable Sensitivity	250 μV/m	350 μV/m
Selectivity (±10 kHz)	45 dB	45 dB
Signal-to-Noise Ratio	55 dB	50dB
Image Response Ratio	35 dB	45 dB
IF Response Ratio	60 dB	60 dB
GENERAL		
Power Requirements (50 Hz)	110/220 V AC	
Power Consumption	9.8 Watts	
Dimensions (W x H x D)	335 x 58 x 268 mm	
Weight (approx.)	2.1 kg	

Because its products are subject to continuous improvement, Fisher Corporation reserves the right to modify product designs and specifications without notice and without incurring any obligation.

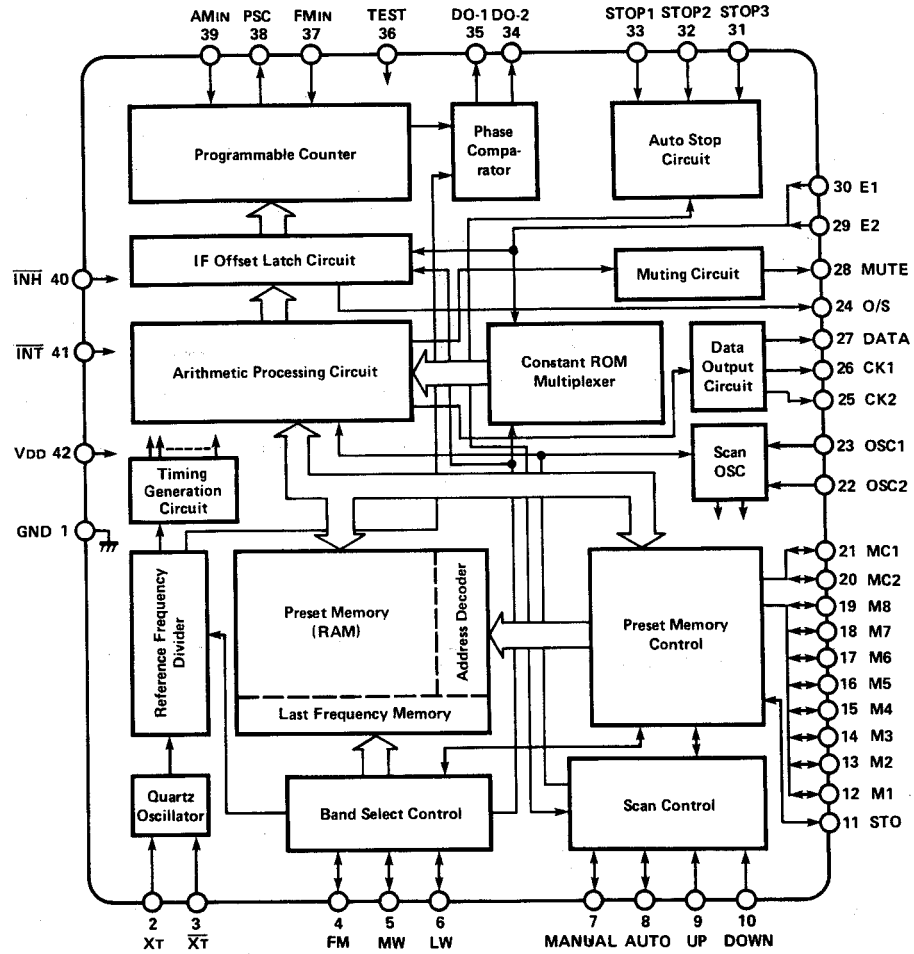
FM IF IC HA 11225 SIGNAL FLOW



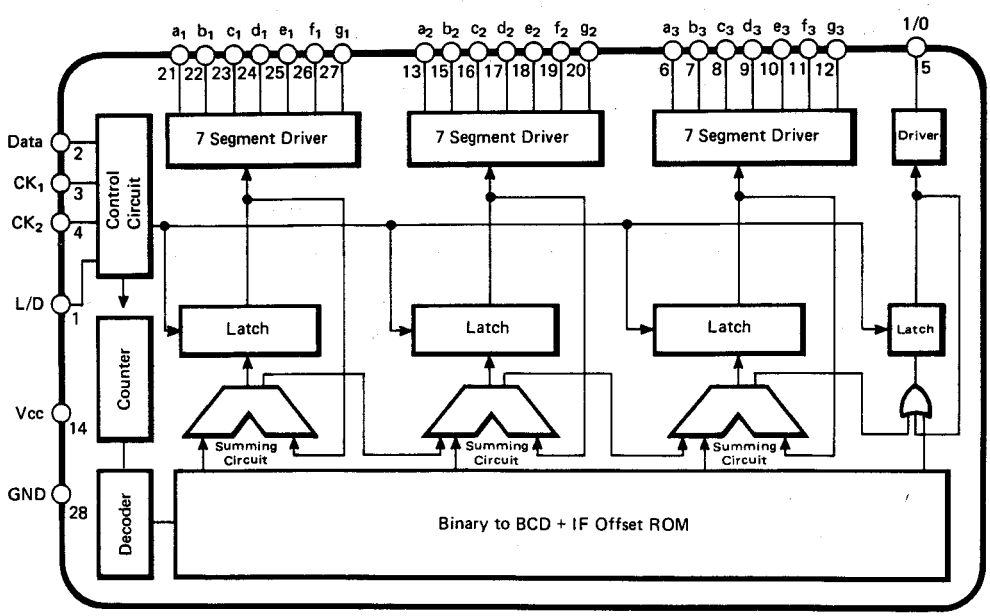
FM MPX IC LA 3390 SIGNAL FLOW



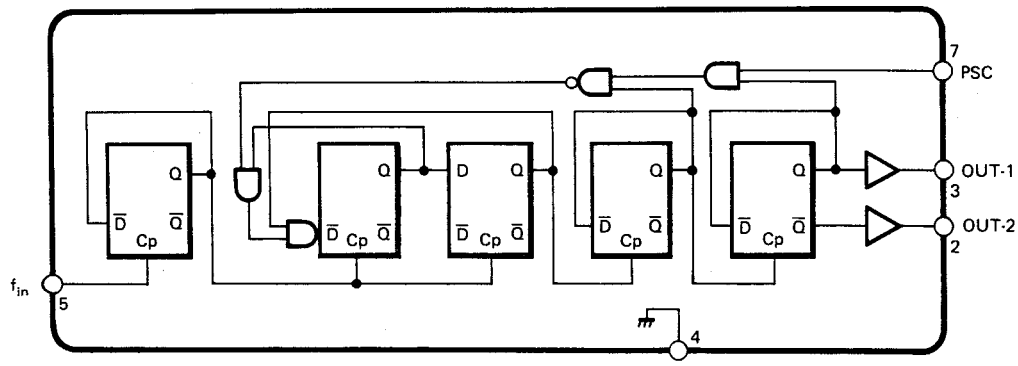
PLL CONTROL IC TC 9147 AP SIGNAL FLOW



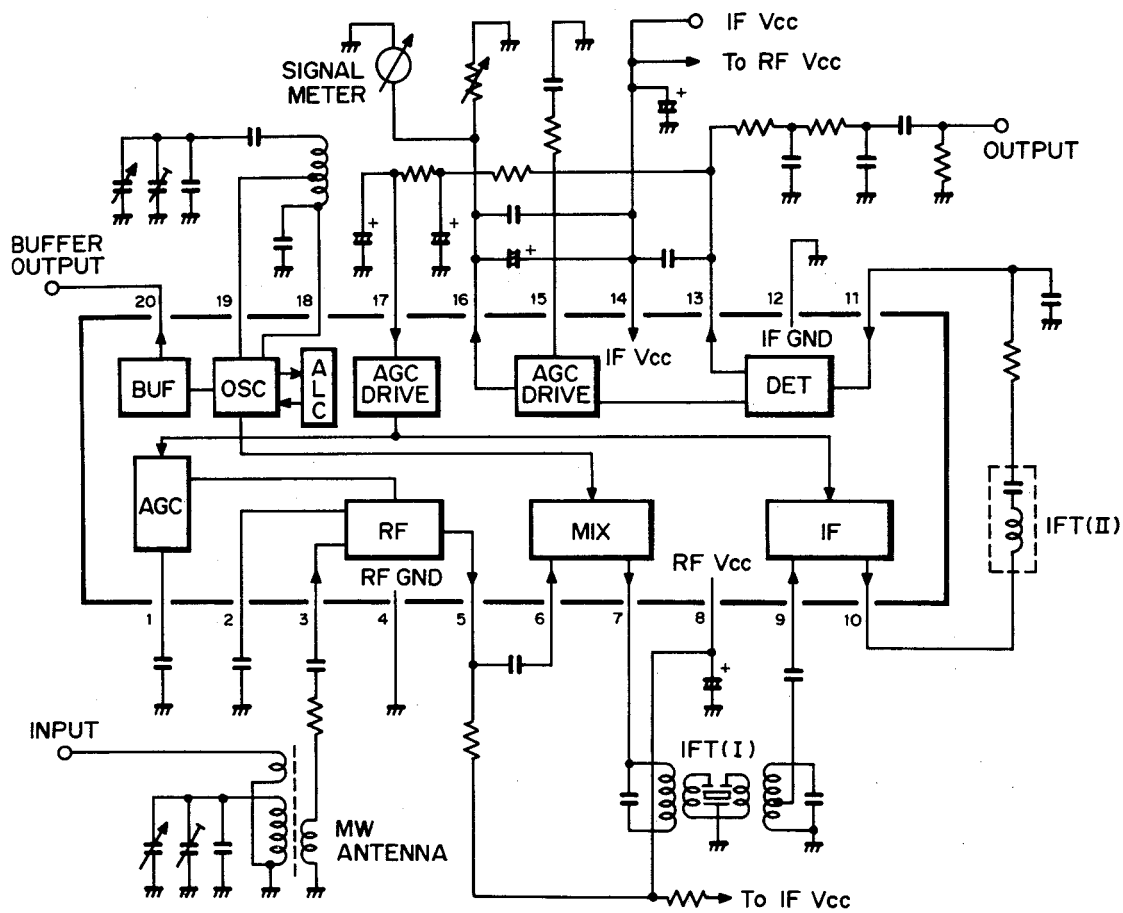
STATIC DRIVER IC TD 6301 AP SIGNAL FLOW



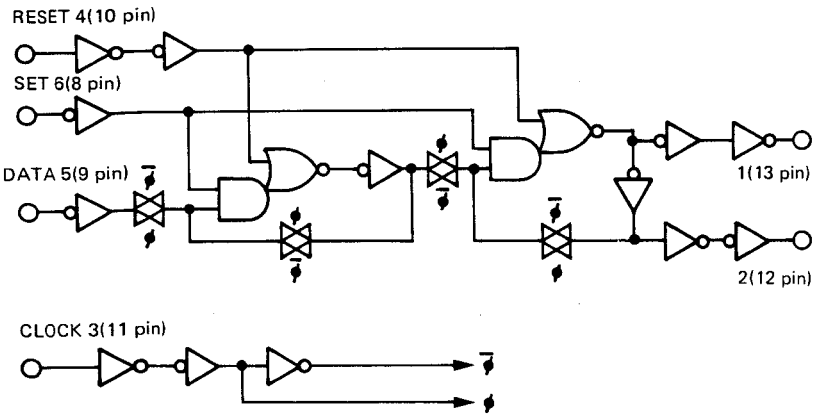
PRE SCALAR IC TD 6104 P SIGNAL FLOW

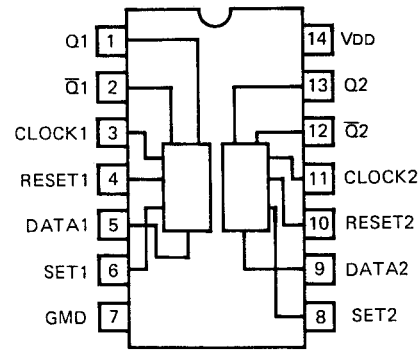


AM RF IC LA 1245 SIGNAL FLOW

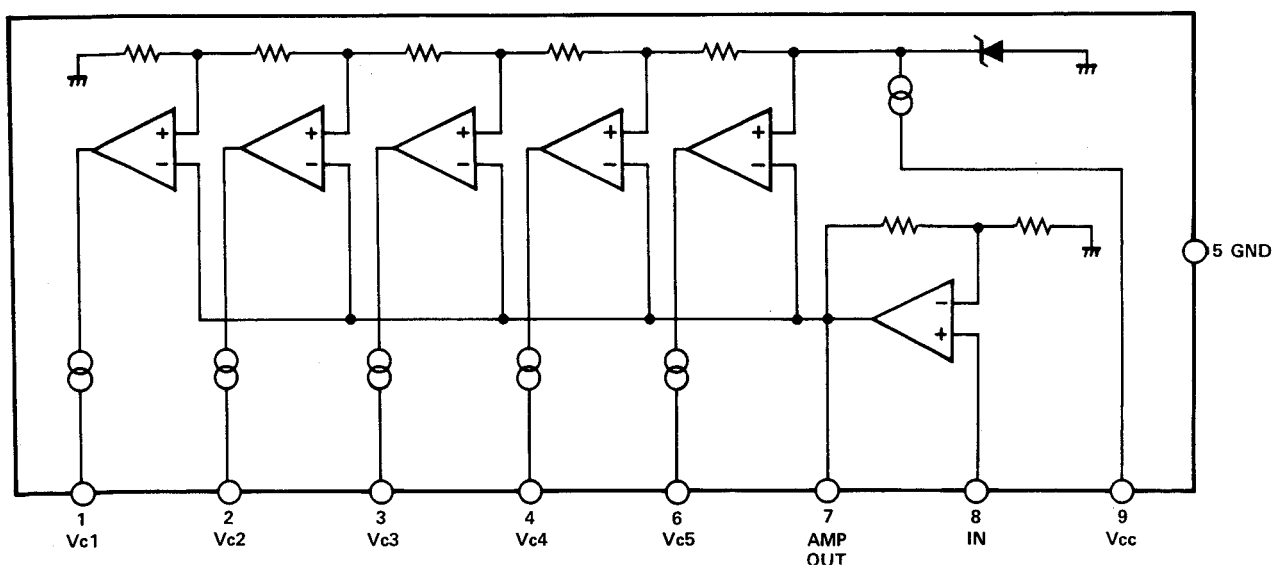


AUTO/MANUAL, ST/MUTE IC LC 4013 B SIGNAL FLOW

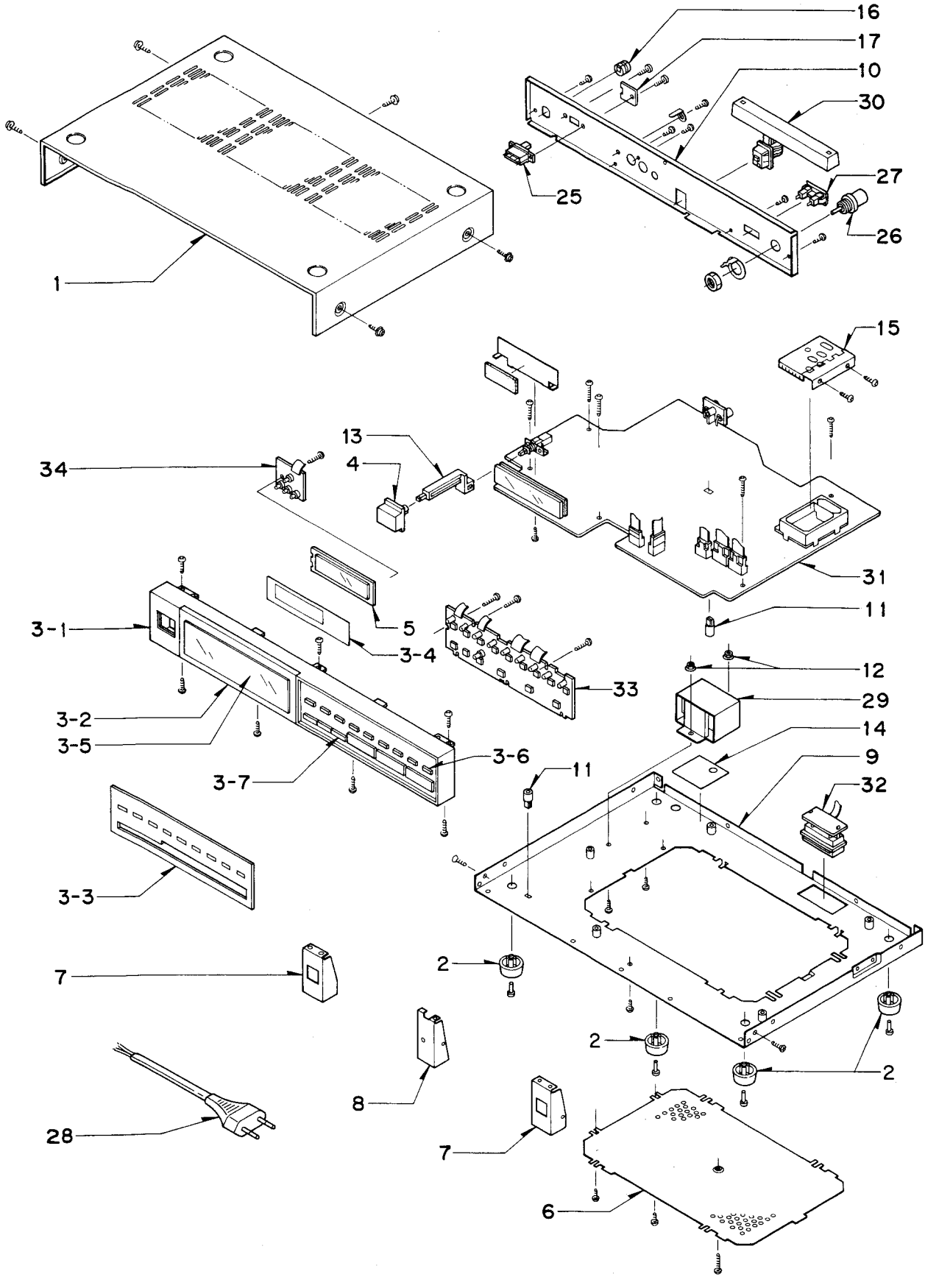




LED SIGNAL LEVEL METER IC LB 1403 SIGNAL FLOW



CABINET & CHASSIS EXPLODED VIEW



PARTS LIST

Ref. No.	Part No.	Description	Q'ty
	PACKING PARTS LIST		
	3 9415 10300	Bag Polyethylene	1
	131 2 3901 10500	Staple	2
	131 6 1169 14302	Box Corrugate-Exp.	1
	131 6 2119 02420	Bag Polyethylene-Exp.	1
	131 6 3009 33380	Pad	1
	131 6 3009 33910	Pad (Left)	1
	131 6 3009 33920	Pad (Right)	1
	131 6 3069 16840	Patching Sheet	1
	131 6 4559 11000	Manufacturing No.	2
	131 6 9459 00300	Rubber Band	1
	ACCESSORIES PARTS LIST		
	131 0 4012 00180	FM Ant. Assy	1
	131 2 7103 43701	Label	1
	131 6 2719 10801	Bag Fan	1
	131 6 4519 15700	Guarantee Certificate	1
	142 6 4119 32017	Explanatory Booklet	1
	CABINET & CHASSIS PARTS LIST		
1	131 2 1410 29002	Cover	1
2	131 2 1801 14600	Leg	4
3	131 0 1016 43602	Panel Decorate Assy	1
3-1	141 2 1129 02702	Cabinet Front	1
3-2	131 2 1110 36802	Plate Decorate	1
3-3	131 2 1110 36902	Plate Decorate	1
3-4	131 2 1110 37000	Plate Decorate	1
3-5	131 2 6308 22400	Filter	1
3-6	141 2 1659 28000	Knob (Seesaw)	1
3-7	141 2 1659 34900	Knob (Seesaw)	1
4	131 2 1601 86200	Knob	1
5	131 2 6308 23000	Filter	1
6	131 2 1410 30700	Cover	1
7	131 2 3101 89000	Metal Mount	2
8	131 2 3101 89600	Metal Mount	1
9	131 2 3301 30700	Chassis	1
10	131 2 3306 38305	Panel Rear	1
11	131 2 3614 22900	Mount P.C.B.	7
12	131 2 4202 12903	Flange Nut M3x8 Z	2
13	131 2 4219 17600	Shaft	1
14	131 2 6101 29600	Plate Shield	1
15	131 2 6101 30500	Plate Shield	1
16	131 2 6111 14200	Bushing (Line Cord)	1
17	131 2 7104 00500	Plate Pad Switch (Voltage Selector)	1
	ELECTRICAL PARTS LIST		
25	⚠ 4 2312 02650	SW. Slide 3P (Voltage Selector)	1
26	4 2352 01061	Socket 1P (FM Antenna)	1
27	4 2359 22480	DIN Socket 2P (AM Ext.Antenna)	1
28	⚠ 4 2432 00071	Line Cord	1
29	⚠ 4 2512 19723	Power Trans	1
30	4 2579 25450	Bar Antenna AM	1
31	141 0 1939 03732	RF Control P.C.B. Assy	1
32	141 0 1939 03741	Connector P.C.B. Assy	1
33	141 0 1939 03711	Preset P.C.B. Assy	1
34	141 0 1939 03720	Indicator P.C.B. Assy	1
C01	CC1 0 3500 ZG00C	Ceramic 0.01μF 50V +80,-20%	1
C02	CC1 0 3500 ZG00C	Ceramic 0.01μF 50V +80,-20%	1
C03	CC1 0 3500 ZG00C	Ceramic 0.01μF 50V +80,-20%	1

NOTES:
1. Parts order must contain Model Number, Part Number and Description.
2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with ⚠, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual.
Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

FM TUNER ALIGNMENT

FM ALIGNMENT – FUNCTION switch to FM position

Note: It is almost unnecessary to adjust coil in Front End as perfectly adjusted.

ITEM	GENERATOR	DIAL SETTING	INDICATOR	PROCEDURE
Note: The FM IF circuit utilizes a non-turnable ceramic filter which establishes the IF bandpass. To insure symmetrical turning and selectivity, the IF must be aligned precisely to the center of the filter bandpass, rather than to 10.7MHz as in conventional LC circuits.				
1. S-CURVE ALIGNMENT	Connect 10.7MHz Sweep Generator output to Front End IF terminal TP01 and ground lead to chassis. Use 5pF capacitor in series with generator output.	Position of non-interference.	Connect gene-scope input to TP07.	Adjust FM DET (T01), so that S-wave form becomes symmetrical.
2. DETECTOR ADJUST-MENT	Connect FM RF generator to FM Antenna terminals. Set generator output level to 60dB at 98MHz ±2kHz. Modulate with 1kHz to provide ±75kHz deviation.	Front Panel DIGITAL Counter Display Set to 98MHz.	Connect DC VTVM across TP02 and TP04.	Set Function Switch to MW position and adjust VR02 until VTVM reads 0V±20mV.
			Same as above.	Set Function Switch to FM and adjust FM DET (T01) until VTVM reads 0V±20mV.
3. FINAL DETECTOR ADJUST-MENT (MINIMUM T.H.D.)	Same as above.	Same as above.	Harmonic Distortion Analyzer to TUNER OUT jack.	Adjust FM DET (T02) for minimum gain and best linearity.
Note: Repeat steps 2 (FM DET Coil T01) and 3 (FM DET Coil T02) until optimum alignment is reached.				
4. FM MUTING LEVEL ADJUST-MENT	Set generator to 98MHz. Adjust ATT output for 20dB.	Same as above.	Scope vertical input to TUNER OUT jack.	Set Function Switch to FM ST/MUTE and adjust VR01 until the received wave form becomes half of the maximum form.
Note: Decrease the output level of ATT and confirm that the wave form disappears. Increase the output level of ATT again and confirm that the input level meets the specifications sufficiently when the wave form has appeared.				
5. FM SIGNAL LEVEL METER ADJUST-MENT	Connect FM RF generator through FM Dummy Antenna to FM antenna terminals. Set generator to 98 MHz.(60 dB).	Set to 98 MHz.	Front Panel SIGNAL STRENGTH LED Display.	Adjust VR 05 until the three signal LED partly lights up.
6. PLL IC FREQUENCY CONTROL ADJUST-MENT (19kHz)	Set generator to 98MHz. Adjust ATT output for 60dB.	Front Panel DIGITAL Counter Display Set to 98MHz	Connect Frequency Counter to TP05 and ground lead to chassis.	Adjust VR03 in multiplex circuit to obtain 19kHz ±50Hz on Frequency Counter.
7. FM STEREO SIGNAL SEPARATION CONTROL	Connect FM Stereo SG to FM Antenna terminals. 19kHz signal ON. Main channel, sub channel signal ON. Apply 1000Hz signal from LEFT channel.		Scope and AC-VTVM to RIGHT TUNER OUT jack.	Adjust VR04 for minimum output.
	Same as above for RIGHT channel.		Scope and AC-VTVM to LEFT TUNER OUT jack.	

Use a screwdriver with plastic grip for all adjustments.

AM TUNER ALIGNMENT

AM ALIGNMENT – FUNCTION switch to LW or MW position
Maintain generator output as low as possible for suitable indication.

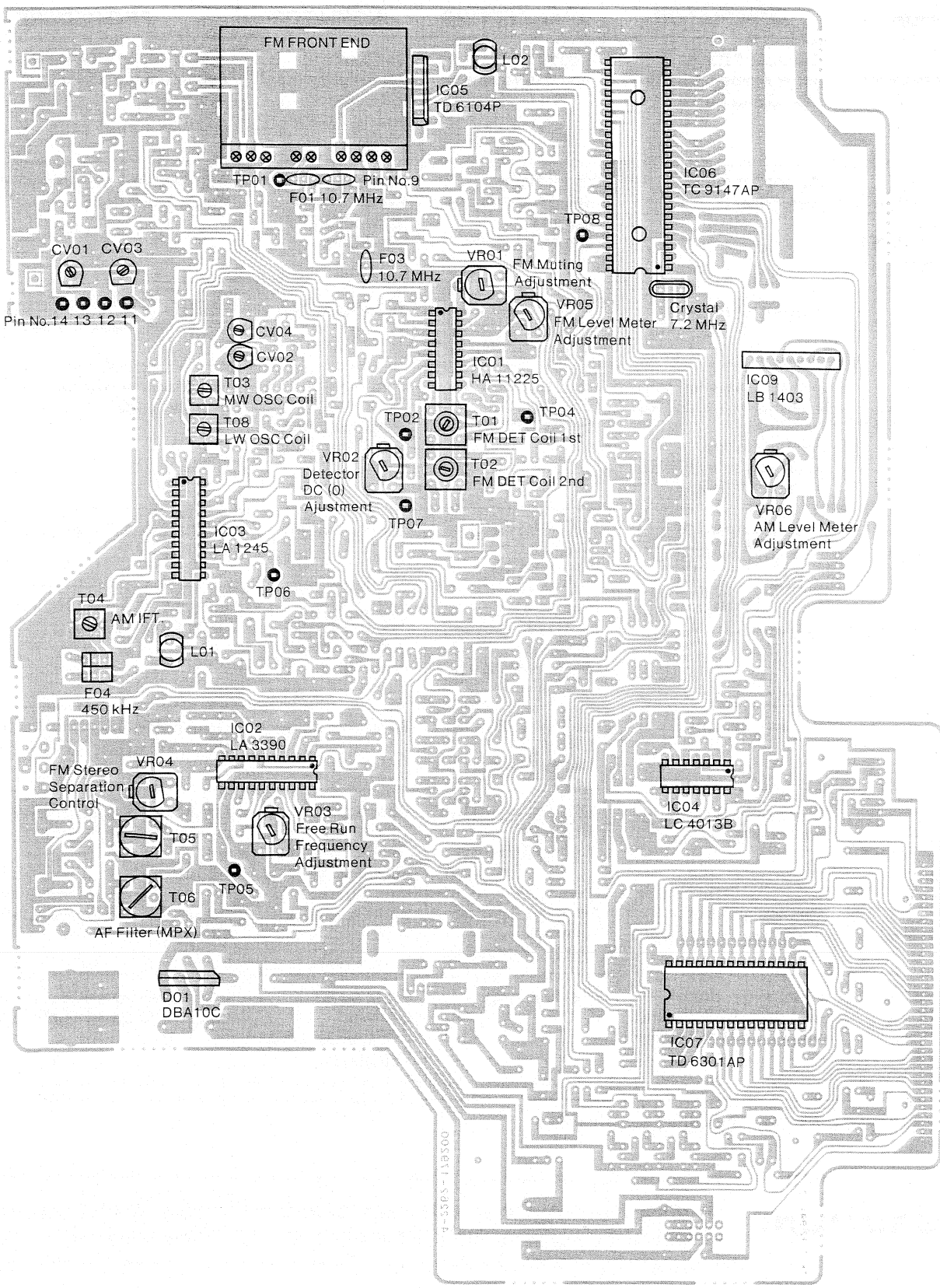
ITEM	GENERATOR	DIAL SETTING	INDICATOR	PROCEDURE
1. AM IF ALIGNMENT	Connect 450kHz IF gene-scope output to Pin 13 and Pin No. 14.	Position of non-interference.	Connect gene-scope input to TP06 and ground lead to Chassis.	Adjust AM IFT (T04) for maximum gain and best symmetry.
2. LW (RF) FREQUENCY COVER ALIGNMENT (360kHz)	Do not connect generator.	Front Panel DIGITAL Counter Display Set to 360kHz.	Connect DC VTVM to No.9 terminal of FM Front End.	Adjust CV04 until DC VTVM reads 8.0 ±0.1V.
3. (153kHz)	Same as above.	DIGITAL Counter Display Set to 153kHz.	Same as above.	Adjust LW OSC Coil (T08) until DC VTVM reads 1.2 ±0.1V.
4. LW (RF) TRACKING ALIGNMENT (160kHz)	AM generator to EXT AM Antenna and GND. terminals. Set to 160kHz. Modulate with 400Hz (30% modulation).	DIGITAL Counter Display Set to 160kHz.	Connect AC VTVM and Oscilloscope to TUNER OUT jack.	Adjust Bar Antenna (LW) for maximum gain output.
5. (350kHz)	Change generator setting to 350kHz.	DIGITAL Counter Display Set to 350kHz.	Same as above.	Adjust CV01 for maximum gain output.
6. MW (RF) FREQUENCY COVER ALIGNMENT (1611kHz)	Do not connect generator.	Front Panel DIGITAL Counter Display Set to 1611kHz.	Connect DC VTVM to No.9 terminal of FM Front End.	Adjust CV02 until DC VTVM reads 10.0 ±0.1V.
7. (522kHz)	Same as above.	DIGITAL Counter Display Set to 522kHz.	Same as above.	Adjust MW OSC Coil (T03) until DC VTVM reads 1.0 ±0.1V.
8. MW (RF) TRACKING ALIGNMENT (603kHz)	Change generator setting to 603kHz.	DIGITAL Counter Display Set to 603kHz.	Connect AC VTVM and Oscilloscope to TUNER OUT jack.	Adjust Bar Antenna (MW) for maximum gain output.
9. (1404kHz)	Change generator setting to 1404kHz.	DIGITAL Counter Display Set to 1404kHz.	Same as above.	Adjust CV03 for maximum gain output.
10. MW SIGNAL LEVEL METER ADJUST-MENT	Change generator setting to 999kHz and output level to 74dB/m.	Set to 999kHz.	Front panel SIGNAL STRENGTH LED Display.	Adjust VR06 until the three signal LED partly lights up.

Use a screwdriver with plastic grip for all adjustments.

CAUTION: This precision high-fidelity instrument should be serviced only by qualified personnel, trained in the repair of transistor equipment and printed circuitry.

RF/IF/MPX P.C.BOARD LAYOUT
ALIGNMENT POINTS

(TOP VIEW)



PARTS LIST

Ref. No.	Part No.	Description	Q'ty
	RF CONTROL P.C.B. ASSY		
	141 0 1939 03732	RF Control P.C.B. Assy	1
	4 1252 00342	FM Front End	1
		(Component parts used in Front End are not serviceable and available.)	
	4 2142 00080	Digitron	1
RY01	4 2322 00220	Relay	1
SW01	4 2312 05600	SW. Push 1 Key	1
	4 2252 00080	Crystal 7.2MHz	1
F01	4 2272 00266	Ceramic Filter 10.7MHz	1
F03	4 2272 00261	Ceramic Filter 10.7MHz	1
F04	4 2272 00230	Ceramic Filter 450kHz	1
CV01	4 2242 00280	Trimmer 20P	1
CV02	4 2242 00280	Trimmer 20P	1
CV03	4 2242 00200	Trimmer 10P	1
CV04	4 2242 00280	Trimmer 20P	1
L01	4 2539 20411	Choke Coil (470μH)	1
L02	4 2532 00211	Choke Coil (33μH)	1
L03	4 2532 00340	Choke Coil (39mH)	1
L04	4 2552 00563	Coil (100μH)	1
L05	4 2552 00563	Coil (100μH)	1
T01	4 2562 00470	FM Quad-Rature Coil 1	1
T02	4 2562 00480	FM Quad-Rature Coil 2	1
T03	4 2582 00481	AM OSC Coil	1
T04	4 2562 00320	AM IFT	1
T05	4 2522 00130	AF Filter	1
T06	4 2522 00130	AF Filter	1
T07	4 2522 00190	AF Filter	1
T08	4 2582 00472	LW OSC Coil	1
VR01	4 2222 01040	Semi Fixed VR. B-20kΩ	1
VR02	4 2222 01020	Semi Fixed VR. B-200kΩ	1
VR03	4 2222 01400	Semi Fixed VR. B-10kΩ	1
VR04	4 2222 01040	Semi Fixed VR. B-20kΩ	1
VR05	4 2222 01020	Semi Fixed VR. B-200kΩ	1
VR06	4 2222 01020	Semi Fixed VR. B-200kΩ	1
	⚠ 4 2349 20131	Fuse T 400mA	1
	4 2352 00200	Fuse Holder	2
	4 2352 01950	Pin Jack 2P (Tuner Output)	1
	4 2372 00830	EC Terminal 1P	2
	111 2 6220 11100	Wire Wrap Terminal	18
	131 2 3101 78300	Metal Mount	1
	131 2 5205 22502	Cushion	1
	131 2 6201 33600	Heatsink	1
PG01	4 2362 00360	Plug 4P	1
PG02	4 2362 00450	Plug 5P	1
PG03	4 2362 00360	Plug 4P	1
PG04	4 2362 00370	Plug 6P	1
PG05	4 2362 00370	Plag 6P	1
	CAPACITORS		
C01	4 2232 00430	Ceramic 0.01μFx2 250V	1
C02	4 2232 00430	Ceramic 0.01μFx2 250V	1
C04	CD1 0 8350 0000V	Electrolytic 1000μF 35V	1
C05	CD1 0 6160 0001V	Electrolytic 10μF 16V	1
C06	CD1 0 7250 0001V	Electrolytic 100μF 25V	1
C07	CD1 0 7160 0001V	Electrolytic 100μF 16V	1
C08	CD1 0 7160 0001V	Electrolytic 100μF 16V	1
C09	CD1 0 7100 0001V	Electrolytic 100μF 10V	1
C10	CD4 7 6100 0001V	Electrolytic 47μF 10V	1
C11	CD1 0 6100 0001V	Electrolytic 10μF 10V	1
C12	CD1 0 7160 0001V	Electrolytic 100μF 16V	1
C13	CI2 2 3160 NG00R	Boundary 0.022μF 16V ±30%	1
C14	CD3 3 6160 0001V	Electrolytic 33μF 16V	1
C15	CD2 2 763A 0001V	Electrolytic 220μF 6.3V	1
C16	CD2 2 5500 0LR1V	Electrolytic 2.2μF 50V	1
C17	CD4 7 4500 0001V	Electrolytic 0.47μF 50V	1
C18	CD4 7 5250 0001V	Electrolytic 4.7μF 25V	1
C19	CD4 7 5250 0001V	Electrolytic 4.7μF 25V	1
C20	CD1 0 7160 0001V	Electrolytic 100μF 16V	1
C21	CD1 0 7160 0001V	Electrolytic 100μF 16V	1
C23	CD3 3 763A 0001V	Electrolytic 330μF 6.3V	1
C24	CD1 0 5500 0001V	Electrolytic 1μF 50V	1
C25	CD1 0 5500 0001V	Electrolytic 1μF 50V	1
C28	CD2 2 5500 0001V	Electrolytic 2.2μF 50V	1
C29	CD2 2 863A 0001V	Electrolytic 2200μF 6.3V	1
C30	CD1 0 7160 0001V	Electrolytic 100μF 16V	1
C31	CD3 3 5500 0001V	Electrolytic 3.3μF 50V	1
C32	CD1 0 5500 0001V	Electrolytic 1μF 50V	1
C33	CD1 0 5500 0001V	Electrolytic 1μF 50V	1
C34	CD3 3 5500 0001V	Electrolytic 3.3μF 50V	1
C35	CD3 3 5500 0001V	Electrolytic 3.3μF 50V	1
C36	CD1 0 7160 0001V	Electrolytic 100μF 16V	1
C37	CD4 7 6160 0001V	Electrolytic 47μF 16V	1
C38	CD4 7 4500 0001V	Electrolytic 0.47μF 50V	1
C39	CD2 2 6160 0001V	Electrolytic 22μF 16V	1
C40	CD1 0 5500 0001V	Electrolytic 1μF 50V	1
C41	CD4 7 4500 0001V	Electrolytic 0.47μF 50V	1
C42	CC1 0 3501 YEY0C	Ceramic 0.01μF 500V +100,-0%	1
C43	CI1 0 3250 NF00R	Boundary 0.01μF 25V ±30%	1
C44	CC2 7 0500 JCH0C	Ceramic 27pF 50V ±5%	1
C45	CC2 7 0500 JCH0C	Ceramic 27pF 50V ±5%	1
C46	CC2 2 3500 ZG00C	Ceramic 0.022μF 50V +80,-20%	1
C47	CC2 7 0500 KD00C	Ceramic 27pF 50V ±10%	1
C48	CC2 2 3500 ZG00C	Ceramic 0.022μF 50V +80,-20%	1
C49	CC2 2 3500 ZG00C	Ceramic 0.022μF 50V +80,-20%	1
C50	CC1 0 2500 KE00R	Ceramic 0.001μF 50V ±10%	1
C51	CC2 7 1500 KE00R	Ceramic 270pF 50V ±10%	1
C52	CC4 7 0500 KD00C	Ceramic 47pF 50V ±10%	1
C53	CC4 7 3500 ZG00C	Ceramic 0.047μF 50V +80,-20%	1
C54	CC4 7 3500 ZG00C	Ceramic 0.047μF 50V +80,-20%	1
C55	CC4 7 3500 ZG00C	Ceramic 0.047μF 50V +80,-20%	1
C56	CC1 0 2500 KE00R	Ceramic 0.001μF 50V ±10%	1
C57	CC4 7 3500 ZG00C	Ceramic 0.047μF 50V +80,-20%	1
C58	CC1 0 3500 ZG00C	Ceramic 0.01μF 50V +80,-20%	1
C59	CC4 7 3500 ZG00C	Ceramic 0.047μF 50V +80,-20%	1
C60	CC4 7 3500 ZG00C	Ceramic 0.047μF 50V +80,-20%	1
C61	CS4 3 1500 J000V	Polystyroul 430pF 50V ±5%	1
C62	CC1 0 0500 DCH0C	Ceramic 10pF 50V ±0.5%	1
C63	CC4 7 3500 ZG00C	Ceramic 0.047μF 50V +80,-20%	1
C64	CM1 5 3500 K00SV	Mylar 0.015μF 50V ±10%	1
C65	CC1 0 3500 ZG00C	Ceramic 0.01μF 50V +80,-20%	1
C66	CM1 0 3500 K00SV	Mylar 0.01μF 50V ±10%	1
C67	CC2 2 3500 ZG00C	Ceramic 0.022μF 50V +80,-20%	1
C68	CI2 2 3160 NG00R	Boundary 0.022μF 16V ±30%	1
C69	CI2 2 3160 NG00R	Boundary 0.022μF 16V ±30%	1
C70	CI2 2 3160 NG00R	Boundary 0.022μF 16V ±30%	1
C72	CI2 2 3160 NG00R	Boundary 0.022μF 16V ±30%	1
C73	CC4 7 0500 KD00C	Ceramic 47pF 50V ±10%	1
C74	CC2 2 3500 ZG00C	Ceramic 0.022μF 50V +80,-20%	1
C75	CC2 2 3500 ZG00C	Ceramic 0.022μF 50V +80,-20%	1
C76	CC2 2 3500 ZG00C	Ceramic 0.022μF 50V +80,-20%	1
C77	CC4 7 3500 ZG00C	Ceramic 0.047μF 50V +80,-20%	1
C78	CC4 7 3500 ZG00C	Ceramic 0.047μF 50V +80,-20%	1
C79	CM1 0 2500 K00SV	Mylar 0.001μF 50V ±10%	1
C80	CM4 7 3500 K00SV	Mylar 0.047μF 50V ±10%	1
C81	CD1 0 5500 0001V	Electrolytic 1μF 50V	1
C82	CS1 0 2500 J000V	Polystyroul 0.001μF 50V ±5%	1

PARTS LIST (Continued)

Ref. No.	Part No.	Description			Q'ty
C83	CC3 3 2500 KE00C	Ceramic	0.0033μF	50V ±10%	1
C84	CC3 3 2500 KE00C	Ceramic	0.0033μF	50V ±10%	1
C85	CM1 0 3500 K00SV	Mylar	0.01μF	50V ±10%	1
C86	CM1 0 3500 K00SV	Mylar	0.01μF	50V ±10%	1
C87	CS4 1 1500 J000V	Polystyroul	410pF	50V ±5%	1
C88	CS4 1 1500 J000V	Polystyroul	410pF	50V ±5%	1
C89	CI2 2 3160 NG00R	Boundary	0.022μF	16V ±30%	1
C91	CI2 2 3160 NG00R	Boundary	0.022μF	16V ±30%	1
C92	CC2 2 3500 ZG00C	Ceramic	0.022μF	50V +80,-20%	1
C93	CC8 2 0500 JPG0C	Ceramic	82pF	50V ±5%	1
C94	CC8 2 0500 JPG0C	Ceramic	82pF	50V ±5%	1
C95	CD1 0 6160 0001V	Electrolytic	10μF	16V	1
C97	CC2 2 3500 ZG00C	Ceramic	0.022μF	50V +80,-20%	1
C101	CD4 7 663A 0001V	Electrolytic	47μF	6.3V	1
C102	CD4 7 663A 0001V	Electrolytic	47μF	6.3V	1
C103	CC4 7 3500 ZG00C	Ceramic	0.047μF	50V +80,-20%	1
C104	CC2 2 3500 ZG00C	Ceramic	0.022μF	50V +80,-20%	1
C105	CD1 0 5500 0001V	Electrolytic	1μF	50V	1
C106	CD4 7 6160 0001V	Electrolytic	47μF	16V	1
C107	CM1 2 2500 K00SV	Mylar	0.0012μF	50V ±10%	1
C113	CC2 7 0500 KD00C	Ceramic	27pF	50V ±10%	1
C114	CC4 7 3500 ZG00C	Ceramic	0.047μF	50V +80,-20%	1
C115	CC2 2 3500 ZG00C	Ceramic	0.022μF	50V +80,-20%	1
C117	CC5 6 0500 KCH0C	Ceramic	56pF	50V ±10%	1
C118	CS1 8 1500 J000V	Polystyroul	180pF	50V ±5%	1
C119	CC4 7 3500 ZG00C	Ceramic	0.047μF	50V +80,-20%	1
C120	CC4 7 3500 ZG00C	Ceramic	0.047μF	50V +80,-20%	1
C121	CC4 7 3500 ZG00C	Ceramic	0.047μF	50V +80,-20%	1
C122	CI4 7 2500 MF00R	Boundary	0.0047μF	50V ±20%	1
C130	CC2 7 0500 KD00C	Ceramic	27pF	50V ±10%	1
C207	CD4 7 6160 0001V	Electrolytic	47μF	16V	1
C301	CD1 0 6160 0001V	Electrolytic	10μF	16V	1
C302	CC4 7 3500 ZG00C	Ceramic	0.047μF	50V +80,-20%	1
C303	CD4 7 5250 0001V	Electrolytic	4.7μF	25V	1
C304	CI1 0 3250 NF00R	Boundary	0.01μF	25V ±30%	1
C305	CI1 0 3250 NF00R	Boundary	0.01μF	25V ±30%	1
C306	CI1 0 3250 NF00R	Boundary	0.01μF	25V ±30%	1
C308	CI1 0 3250 NF00R	Boundary	0.01μF	25V ±30%	1
C309	CI1 0 3250 NF00R	Boundary	0.01μF	25V ±30%	1
C310	CI1 0 3250 NF00R	Boundary	0.01μF	25V ±30%	1
C311	CI1 0 3250 NF00R	Boundary	0.01μF	25V ±30%	1
C312	CI1 0 3250 NF00R	Boundary	0.01μF	25V ±30%	1
C313	CI1 0 3250 NF00R	Boundary	0.01μF	25V ±30%	1
C314	CI1 0 3250 NF00R	Boundary	0.01μF	25V ±30%	1
C315	CI1 0 3250 NF00R	Boundary	0.01μF	25V ±30%	1
C316	CI1 0 3250 NF00R	Boundary	0.01μF	25V ±30%	1
C317	CI1 0 3250 NF00R	Boundary	0.01μF	25V ±30%	1
C318	CI1 0 3250 NF00R	Boundary	0.01μF	25V ±30%	1
C319	CI1 0 3250 NF00R	Boundary	0.01μF	25V ±30%	1
C320	CI1 0 3250 NF00R	Boundary	0.01μF	25V ±30%	1
C321	CI1 0 3250 NF00R	Boundary	0.01μF	25V ±30%	1
C322	CC1 0 3500 ZG00C	Ceramic	0.01μF	50V +80,-20%	1
C323	CD1 0 5500 0001V	Electrolytic	1μF	50V	1

Ref. No.	Part No.	Description	Q'ty
	SEMICONDUCTORS		
	If necessary, replace both Diode D06,07 (SVC 321) and Diode D44 (SVC 321) together with new ones which have the equivalent characteristics.		
D01 ⚠	202 5 4620 01010	Bridge Diode, DBA 10 C	1
D02	202 5 3210 13013	Zener Diode, GZA 13 Z	1
D03	202 5 3210 06213	Zener Diode, GZA 6.2 Z	1
D04	202 5 2470 13540	Diode, DS 135 D	1
D06	202 5 1260 32113	Diode, SVC 321	1
D07	202 5 1260 32113	Diode, SVC 321	1
D08	205 5 9040 44210	Diode, DS 442	1
D15	205 5 9040 44210	Diode, DS 442	1
D17	205 5 9040 44210	Diode, DS 442	1
D19	205 5 9040 44210	Diode, DS 442	1
D21	202 5 3160 00100	Diode, GMA 01	1
D23	205 5 9040 44210	Diode, DS 442	1
D24	202 5 3200 02090	Zener Diode, GZA 2.0 Z	1
D25	205 5 9040 44210	Diode, DS 442	1
D26	205 5 9040 44210	Diode, DS 442	1
D27	205 5 9040 44210	Diode, DS 442	1
D28	202 5 3160 00100	Diode, GMA 01	1
D29	202 5 3160 00100	Diode, GMA 01	1
D30	202 5 3160 00100	Diode, GMA 01	1
D31	202 5 3160 00100	Diode, GMA 01	1
D32	202 5 3160 00100	Diode, GMA 01	1
D33	205 5 9040 44210	Diode, DS 442	1
D34	205 5 9040 44210	Diode, DS 442	1
D35	205 5 9040 44210	Diode, DS 442	1
D36	205 5 9040 44210	Diode, DS 442	1
D39	205 5 9040 44210	Diode, DS 442	1
D40	205 5 9040 44210	Diode, DS 442	1
D41	202 5 3160 00100	Diode, GMA 01	1
D42	202 5 3160 00100	Diode, GMA 01	1
D43	202 5 3160 00100	Diode, GMA 01	1
D44	202 5 1260 32113	Diode, SVC 321	1
D205	202 5 3160 00100	Diode, GMA 01	1
D206	202 5 2470 13540	Diode, DS 135 D	1
D207	202 5 3200 02090	Zener Diode, GZA 2.0 Z	1
D301	205 5 9040 44210	Diode, DS 442	1
D302	205 5 9040 44210	Diode, DS 442	1
D303	202 5 3160 00100	Diode, GMA 01	1
D304	202 5 3160 00100	Diode, GMA 01	1
D305	202 5 3160 00100	Diode, GMA 01	1
D306	202 5 3160 00100	Diode, GMA 01	1
D307	202 5 3160 00100	Diode, GMA 01	1
D308	202 5 3160 00100	Diode, GMA 01	1
D309	205 5 9040 44210	Diode, DS 442	1
IC01	IKK - HA11 225-	IC, HA 11225	1
IC02	206 5 1613 39010	IC, LA 3390	1
IC03	206 5 0191 24510	IC, LA 1245	1
IC04	206 5 9464 01310	IC, LC 4013 B	1
IC05	ITT - TD61 04P-	IC, TD 6104 P	1
IC06	ITT - TC91 47P-	IC, TC 9147 AP	1
IC07	ITT - TD63 01AP-	IC, TD 6301 AP	1
IC09	206 5 2591 40310	IC, LB 1403	1
Q01	203 5 8620 32550	Transistor, 2SD 325	1
Q02	203 5 8620 32550	Transistor, 2SD 325	1
Q05	203 5 5000 53650	Transistor, 2SC 536	1
Q06	203 5 7230 60850	Transistor, 2SA 608	1
Q07	203 5 5000 53650	Transistor, 2SC 536	1
Q08	203 5 7230 60850	Transistor, 2SA 608	1
Q09	203 5 5500 93050	Transistor, 2SC 930	1
Q12	203 5 7230 60850	Transistor, 2SA 608	1

PARTS LIST (Continued)

Ref. No.	Part No.	Description	Q'ty
Q14	203 5 6540 04430	FET, 2SK 44	1
Q15	203 5 5251 57080	Transistor, 2SC 1570	1
Q21	203 5 5000 53650	Transistor, 2SC 536	1
Q22	203 5 5000 53650	Transistor, 2SC 536	1
Q23	203 5 5000 53650	Transistor, 2SC 536	1
Q24	203 5 7230 60850	Transistor, 2SA 608	1
Q25	203 5 7230 60850	Transistor, 2SA 608	1
Q26	203 5 5000 53650	Transistor, 2SC 536	1
Q27	203 5 7230 60850	Transistor, 2SA 608	1
Q28	203 5 4921 01270	Transistor, 2SD 1012	1
Q29	203 5 4921 01270	Transistor, 2SD 1012	1
Q30	203 5 5000 53650	Transistor, 2SC 536	1
Q31	203 5 5000 53650	Transistor, 2SC 536	1
Q32	203 5 5000 53650	Transistor, 2SC 536	1
Q33	203 5 6510 04160	FET, 2SK 41	1
Q34	203 5 6510 04160	FET, 2SK 41	1
Q35	203 5 5000 53650	Transistor, 2SC 536	1
Q36	203 5 5000 53650	Transistor, 2SC 536	1
Q37	203 5 7230 60850	Transistor, 2SA 608	1
Q38	203 5 5000 53650	Transistor, 2SC 536	1
Q39	203 5 5000 53650	Transistor, 2SC 536	1
Q40	203 5 7230 60850	Transistor, 2SA 608	1
Q202	203 5 5000 53650	Transistor, 2SC 536	1
Q203	203 5 7230 60850	Transistor, 2SA 608	1
Q301	203 5 5000 53650	Transistor, 2SC 536	1
Q302	203 5 7230 60850	Transistor, 2SA 608	1

RESISTORS

R02	RD6 8 1251 JM000	Carbon	680Ω	1/4W	±5%	1
R03	RD2 7 1251 JM000	Carbon	270Ω	1/4W	±5%	1
R04	RD2 2 A251 JM000	Carbon	2.2Ω	1/4W	±5%	1
R05	RD1 0 2251 JM000	Carbon	1kΩ	1/4W	±5%	1
R06	RD4 7 1251 JM000	Carbon	470Ω	1/4W	±5%	1
R10	RD3 3 3161 JH000	Carbon	33kΩ	1/6W	±5%	1
R11	RD2 7 2161 JH000	Carbon	2.7kΩ	1/6W	±5%	1
R12	RD2 7 2161 JH000	Carbon	2.7kΩ	1/6W	±5%	1
R13	RD3 3 3161 JH000	Carbon	33kΩ	1/6W	±5%	1
R14	RD2 7 2161 JH000	Carbon	2.7kΩ	1/6W	±5%	1
R15	RD2 7 2161 JH000	Carbon	2.7kΩ	1/6W	±5%	1
R16	RD4 7 1161 JH000	Carbon	470Ω	1/6W	±5%	1
R17	RD3 9 1161 JH000	Carbon	390Ω	1/6W	±5%	1
R18	RD5 6 1161 JH000	Carbon	560Ω	1/6W	±5%	1
R19	RD1 0 1251 JS000	Carbon	100Ω	1/4W	±5%	1
R20	RD3 3 1161 JH000	Carbon	330Ω	1/6W	±5%	1
R21	RD1 0 1161 JH000	Carbon	100Ω	1/6W	±5%	1
R22	RD3 9 3161 JH000	Carbon	39kΩ	1/6W	±5%	1
R23	RD8 2 2251 JM000	Carbon	8.2kΩ	1/4W	±5%	1
R25	RD2 2 2161 JH000	Carbon	2.2kΩ	1/6W	±5%	1
R26	RD2 2 0251 JM000	Carbon	22Ω	1/4W	±5%	1
R27	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R32	RD1 0 3161 JH000	Carbon	10kΩ	1/6W	±5%	1
R33	RD1 0 3161 JH000	Carbon	10kΩ	1/6W	±5%	1
R34	RD4 7 4161 JH000	Carbon	470kΩ	1/6W	±5%	1
R35	RD6 8 3161 JH000	Carbon	68kΩ	1/6W	±5%	1
R36	RD2 2 0251 JM000	Carbon	22Ω	1/4W	±5%	1
R37	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R38	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R39	RD1 2 4161 JH000	Carbon	120kΩ	1/6W	±5%	1
R40	RD2 2 4161 JH000	Carbon	220kΩ	1/6W	±5%	1
R41	RD1 0 0161 JH000	Carbon	10Ω	1/6W	±5%	1
R42	RD1 2 4161 JH000	Carbon	120kΩ	1/6W	±5%	1
R43	RD2 2 4161 JH000	Carbon	220kΩ	1/6W	±5%	1
R44	RD1 0 0161 JH000	Carbon	10Ω	1/6W	±5%	1
R45	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R46	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R47	RD2 2 2161 JH000	Carbon	2.2kΩ	1/6W	±5%	1
R48	RD2 2 2161 JH000	Carbon	2.2kΩ	1/6W	±5%	1
R49	RD5 6 2161 JH000	Carbon	5.6kΩ	1/6W	±5%	1
R50	RD5 6 2161 JH000	Carbon	5.6kΩ	1/6W	±5%	1
R51	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R52	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R53	RD2 7 4161 JH000	Carbon	270kΩ	1/6W	±5%	1
R54	RD1 2 3161 JH000	Carbon	12kΩ	1/6W	±5%	1
R55	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R56	RD1 5 2161 JH000	Carbon	1.5kΩ	1/6W	±5%	1
R57	RD5 6 2161 JH000	Carbon	5.6kΩ	1/6W	±5%	1
R59	RD4 7 0251 JM000	Carbon	47Ω	1/4W	±5%	1
R60	RD1 0 1251 JM000	Carbon	100Ω	1/4W	±5%	1
R61	RD1 5 2161 JH000	Carbon	1.5kΩ	1/6W	±5%	1
R62	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R63	RD1 5 2161 JH000	Carbon	1.5kΩ	1/6W	±5%	1
R64	RD2 2 0251 JM000	Carbon	22Ω	1/4W	±5%	1
R65	RD5 6 0251 JM000	Carbon	56Ω	1/4W	±5%	1
R66	RD8 2 2161 JH000	Carbon	8.2kΩ	1/6W	±5%	1
R67	RD1 0 3251 JM000	Carbon	10kΩ	1/4W	±5%	1
R68	RD1 0 3161 JH000	Carbon	10kΩ	1/6W	±5%	1
R71	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R72	RD2 2 4161 JH000	Carbon	220kΩ	1/6W	±5%	1
R73	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R74	RD5 6 2161 JH000	Carbon	5.6kΩ	1/6W	±5%	1
R75	RD5 6 2161 JH000	Carbon	5.6kΩ	1/6W	±5%	1
R76	RD1 0 1251 JM000	Carbon	100Ω	1/4W	±5%	1
R78	RD2 7 2161 JH000	Carbon	2.7kΩ	1/6W	±5%	1
R79	RD4 7 1161 JH000	Carbon	470Ω	1/6W	±5%	1
R80	RD1 0 3161 JH000	Carbon	10kΩ	1/6W	±5%	1
R81	RD5 6 2161 JH000	Carbon	5.6kΩ	1/6W	±5%	1
R82	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R83	RD1 0 1251 JM000	Carbon	100Ω	1/4W	±5%	1
R84	RD6 8 3161 JH000	Carbon	68kΩ	1/6W	±5%	1
R85	RD6 8 3161 JH000	Carbon	68kΩ	1/6W	±5%	1
R86	RC4 7 0501 KH000	Carbon	47Ω	1/2W	±10%	1
R89	RD4 7 2161 JH000	Carbon	4.7kΩ	1/6W	±5%	1
R90	RD2 7 1161 JH000	Carbon	270Ω	1/6W	±5%	1
R94	RD1 0 3161 JH000	Carbon	10kΩ	1/6W	±5%	1
R95	RD1 0 3161 JH000	Carbon	10kΩ	1/6W	±5%	1
R98	RD3 3 3161 JH000	Carbon	33kΩ	1/6W	±5%	1
R99	RD3 3 3161 JH000	Carbon	33kΩ	1/6W	±5%	1
R100	RD2 7 2161 JH000	Carbon	2.7kΩ	1/6W	±5%	1
R101	RD2 7 2161 JH000	Carbon	2.7kΩ	1/6W	±5%	1
R102	RD2 7 2161 JH000	Carbon	2.7kΩ	1/6W	±5%	1
R103	RD2 7 2161 JH000	Carbon	2.7kΩ	1/6W	±5%	1
R104	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R110	RD5 6 3161 JH000	Carbon	56kΩ	1/6W	±5%	1
R111	RD1 5 2161 JH000	Carbon	1.5kΩ	1/6W	±5%	1
R112	RD1 0 3161 JH000	Carbon	10kΩ	1/6W	±5%	1
R113	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R114	RD3 3 3161 JH000	Carbon	33kΩ	1/6W	±5%	1
R115	RD1 8 4161 JH000	Carbon	180kΩ	1/6W	±5%	1
R116	RD1 0 3161 JH000	Carbon	10kΩ	1/6W	±5%	1
R117	RD1 0 3161 JH000	Carbon	10kΩ	1/6W	±5%	1
R118	RD1 0 3161 JH000	Carbon	10kΩ	1/6W	±5%	1
R119	RD2 7 2161 JH000	Carbon	2.7kΩ	1/6W	±5%	1
R120	RD4 7 2161 JH000	Carbon	4.7kΩ	1/6W	±5%	1
R121	RD4 7 1161 JH000	Carbon	470Ω	1/6W	±5%	1
R122	4 2212 00150	Resistor	20kΩ x11		±10%	1
R123	4 2219 70730	Resistor	20kΩ x10		±5%	1
R124	RD3 3 2161 JH000	Carbon	3.3kΩ	1/6W	±5%	1
R125	RD2 7 2251 JM000	Carbon	2.7kΩ	1/4W	±5%	1

PARTS LIST (Continued)

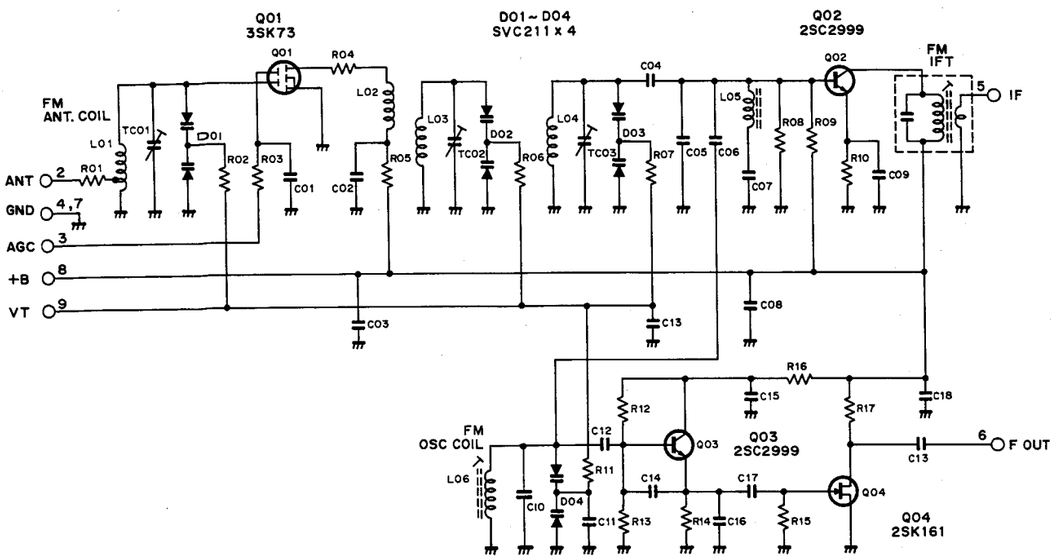
Ref. No.	Part No.	Description	Q'ty
R126	RD1 8 3251 JM000 Carbon	18kΩ 1/4W ±5%	1
R127	RD2 2 2161 JH000 Carbon	2.2kΩ 1/6W ±5%	1
R130	RD1 0 4251 JM000 Carbon	100kΩ 1/4W ±5%	1
R132	RD4 7 3161 JH000 Carbon	47kΩ 1/6W ±5%	1
R133	RD1 0 4161 JH000 Carbon	100kΩ 1/6W ±5%	1
R134	RD1 0 3161 JH000 Carbon	10kΩ 1/6W ±5%	1
R135	RD1 0 4161 JH000 Carbon	100kΩ 1/6W ±5%	1
R138	RD1 5 4161 JH000 Carbon	150kΩ 1/6W ±5%	1
R139	RD3 9 4161 JH000 Carbon	390kΩ 1/6W ±5%	1
R140	RC2 2 2501 KH000 Carbon	2.2kΩ 1/2W ±10%	1
R141	RD4 7 2161 JH000 Carbon	4.7kΩ 1/6W ±5%	1
R142	RD1 0 2161 JH000 Carbon	1kΩ 1/6W ±5%	1
R143	RD1 0 1161 JH000 Carbon	100Ω 1/6W ±5%	1
R144	RD1 0 5161 JH000 Carbon	1MΩ 1/6W ±5%	1
R145	RD8 2 4161 JH000 Carbon	820kΩ 1/6W ±5%	1
R146	RD4 7 2161 JH000 Carbon	4.7kΩ 1/6W ±5%	1
R147	RD4 7 3161 JH000 Carbon	47kΩ 1/6W ±5%	1
R148	RD5 6 3161 JH000 Carbon	56kΩ 1/6W ±5%	1
R149	RD2 7 3161 JH000 Carbon	27kΩ 1/6W ±5%	1
R151	RD2 2 4161 JH000 Carbon	220kΩ 1/6W ±5%	1
R152	RD1 0 4161 JH000 Carbon	100kΩ 1/6W ±5%	1
R153	RD3 3 3161 JH000 Carbon	33kΩ 1/6W ±5%	1
R154	RD2 7 2161 JH000 Carbon	2.7kΩ 1/6W ±5%	1
R155	RD2 7 2161 JH000 Carbon	2.7kΩ 1/6W ±5%	1
R156	RD3 3 3161 JH000 Carbon	33kΩ 1/6W ±5%	1
R157	RD2 7 2161 JH000 Carbon	2.7kΩ 1/6W ±5%	1
R158	RD2 7 2161 JH000 Carbon	2.7kΩ 1/6W ±5%	1
R159	RD4 7 2161 JH000 Carbon	4.7kΩ 1/6W ±5%	1
R172	RD1 0 2161 JH000 Carbon	1kΩ 1/6W ±5%	1
R173	RD2 2 2251 JM000 Carbon	2.2kΩ 1/4W ±5%	1
R174	RD1 0 3161 JH000 Carbon	10kΩ 1/6W ±5%	1
R175	RD1 0 3161 JH000 Carbon	10kΩ 1/6W ±5%	1
R176	RD1 0 3161 JH000 Carbon	10kΩ 1/6W ±5%	1
R207	RD1 0 3161 JH000 Carbon	10kΩ 1/6W ±5%	1
R208	RD4 7 3161 JH000 Carbon	47kΩ 1/6W ±5%	1
R209	RD1 0 3161 JH000 Carbon	10kΩ 1/6W ±5%	1
R210	RD1 0 3161 JH000 Carbon	10kΩ 1/6W ±5%	1
R219	RD4 7 3161 JH000 Carbon	47kΩ 1/6W ±5%	1
R301	RD3 3 3161 JH000 Carbon	33kΩ 1/6W ±5%	1
R302	RD1 0 3161 JH000 Carbon	10kΩ 1/6W ±5%	1
R303	RD2 7 2161 JH000 Carbon	2.7kΩ 1/6W ±5%	1
R304	RD1 0 3161 JH000 Carbon	10kΩ 1/6W ±5%	1
R305	RD1 0 3161 JH000 Carbon	10kΩ 1/6W ±5%	1
R306	RD1 0 3161 JH000 Carbon	10kΩ 1/6W ±5%	1

Ref. No.	Part No.	Description	Q'ty
	CONNECTOR P.C.B. ASSY		
	141 0 1939 03741	Connector P.C.B. Assy	1
J05	131 2 9800 01049	Jumper	1
PG01	4 2362 01010	Plug 5P	1
	PRESET P.C.B. ASSY		
	141 0 1939 03711	Preset P.C.B. Assy	1
	131 2 4208 42600	Spacer (L.E.D.)	1
SW01	4 2312 05300	Keyboard SW. 6mm (1)	1
SW02	4 2312 05300	Keyboard SW. 6mm (2)	1
SW03	4 2312 05300	Keyboard SW. 6mm (3)	1
SW04	4 2312 05300	Keyboard SW. 6mm (4)	1
SW05	4 2312 05300	Keyboard SW. 6mm (5)	1
SW06	4 2312 05300	Keyboard SW. 6mm (6)	1
SW07	4 2312 05300	Keyboard SW. 6mm (7)	1
SW08	4 2312 05300	Keyboard SW. 6mm (8)	1
SW09	4 2312 05300	Keyboard SW. 6mm (Memory)	1
SW10	4 2312 05300	Keyboard SW. 6mm (Tuning, –)	1
SW11	4 2312 05300	Keyboard SW. 6mm (Tuning, +)	1
SW12	4 2312 05300	Keyboard SW. 6mm (MW)	1
SW13	4 2312 05300	Keyboard SW. 6mm (FM)	1
SW14	4 2312 05300	Keyboard SW. 6mm (LW)	1
SW15	4 2312 05300	Keyboard SW. 6mm (Mode)	1
PG01	131 0 4006 22285	Cord Assy	1
PG02	131 0 4006 22277	Cord Assy	1
PG04	131 0 4006 22221	Cord Assy	1
PG05	131 0 4006 22221	Cord Assy	1
	CAPACITOR		
C01	CI2 2 3160 NG00R	Boundary 0.022μF 16V ±30%	1
	SEMICONDUCTORS		
D01	DYY - SLR- 54VT-	L.E.D., SLR 54 VT (1)	1
D02	DYY - SLR- 54VT-	L.E.D., SLR 54 VT (2)	1
D03	DYY - SLR- 54VT-	L.E.D., SLR 54 VT (3)	1
D04	DYY - SLR- 54VT-	L.E.D., SLR 54 VT (4)	1
D05	DYY - SLR- 54VT-	L.E.D., SLR 54 VT (5)	1
D06	DYY - SLR- 54VT-	L.E.D., SLR 54 VT (6)	1
D07	DYY - SLR- 54VT-	L.E.D., SLR 54 VT (7)	1
D08	DYY - SLR- 54VT-	L.E.D., SLR 54 VT (8)	1
D09	DYY - SLR- 54PT-	L.E.D., SLR 54 PT (Memory)	1
D11	4 2029 72262	L.E.D., SLR 34 URC (Mode)	1
	RESISTORS		
R01	RD1 0 2161 JH000 Carbon	1kΩ 1/6W ±5%	1
R02	RD2 7 1161 JH000 Carbon	270Ω 1/6W ±5%	1
R03	RD1 0 1161 JH000 Carbon	100Ω 1/6W ±5%	1
	INDICATOR P.C.B. ASSY		
	141 0 1939 03720	Indicator P.C.B. Assy	1
	131 2 4208 42600	Spacer (L.E.D.)	4
	131 0 4006 22209	Cord Assy	1
	SEMICONDUCTORS		
D01	4 2029 72262	L.E.D., SLR.34 URC (Stereo)	1
D02	4 2029 72263	L.E.D., SLR.34 MC (Signal 1)	1
D03	4 2029 72263	L.E.D., SLR.34 MC (Signal 2)	1
D04	4 2029 72263	L.E.D., SLR.34 MC (Signal 3)	1

NOTES:

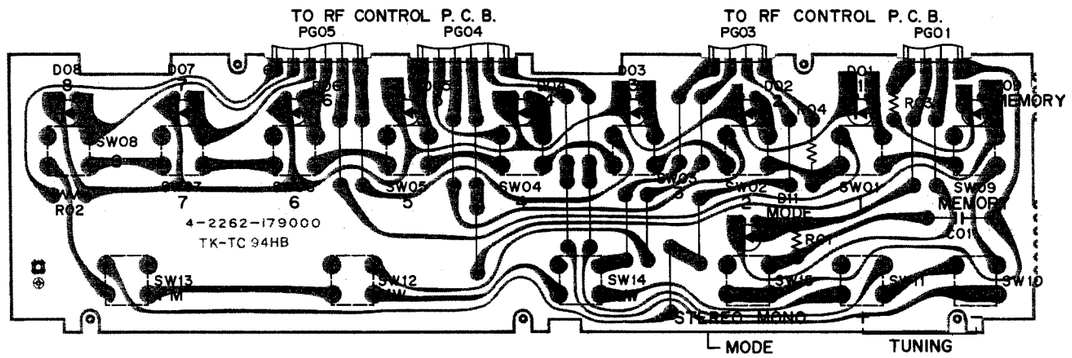
1. Parts order must contain Model Number, Part Number and Description.
2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

FRONT END SCHEMATIC DIAGRAM



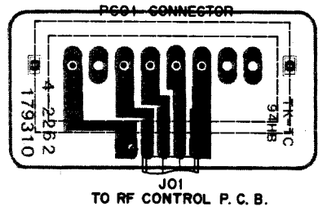
PRESET PRINTED CIRCUIT BOARD

(BOTTOM VIEW)



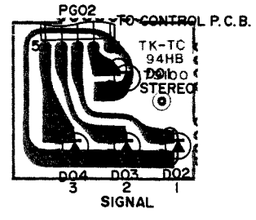
CONNECTOR P.C.BOARD

(BOTTOM VIEW)

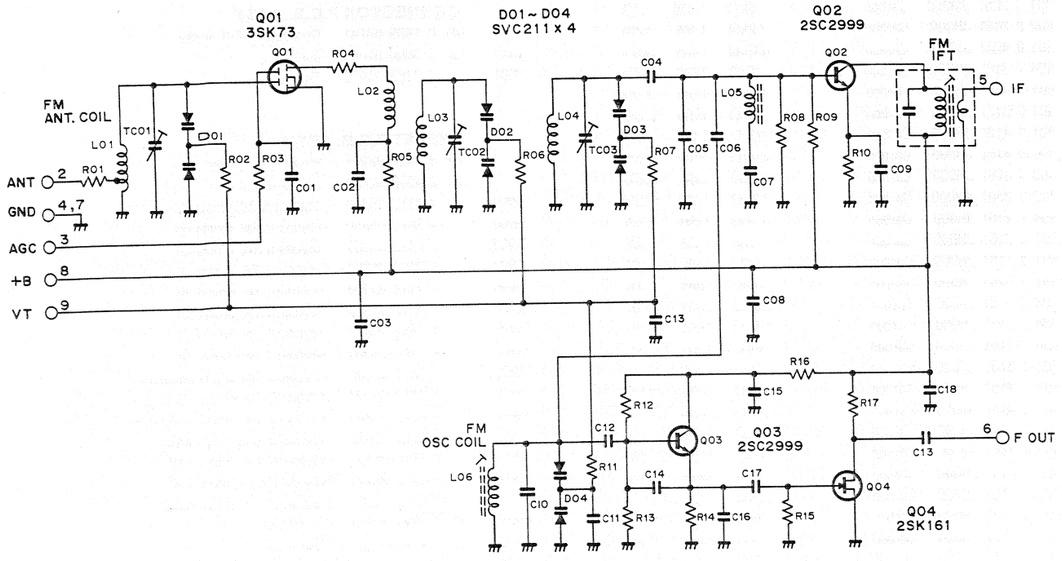


INDICATOR P.C.BOARD

(BOTTOM VIEW)

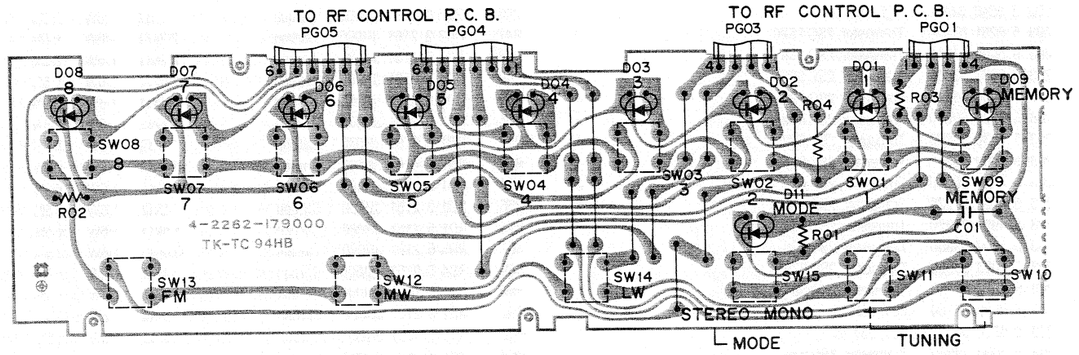


FRONT END SCHEMATIC DIAGRAM



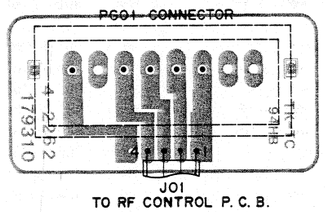
PRESET PRINTED CIRCUIT BOARD

(BOTTOM VIEW)



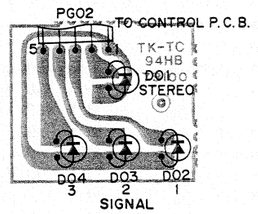
CONNECTOR P.C.BOARD

(BOTTOM VIEW)



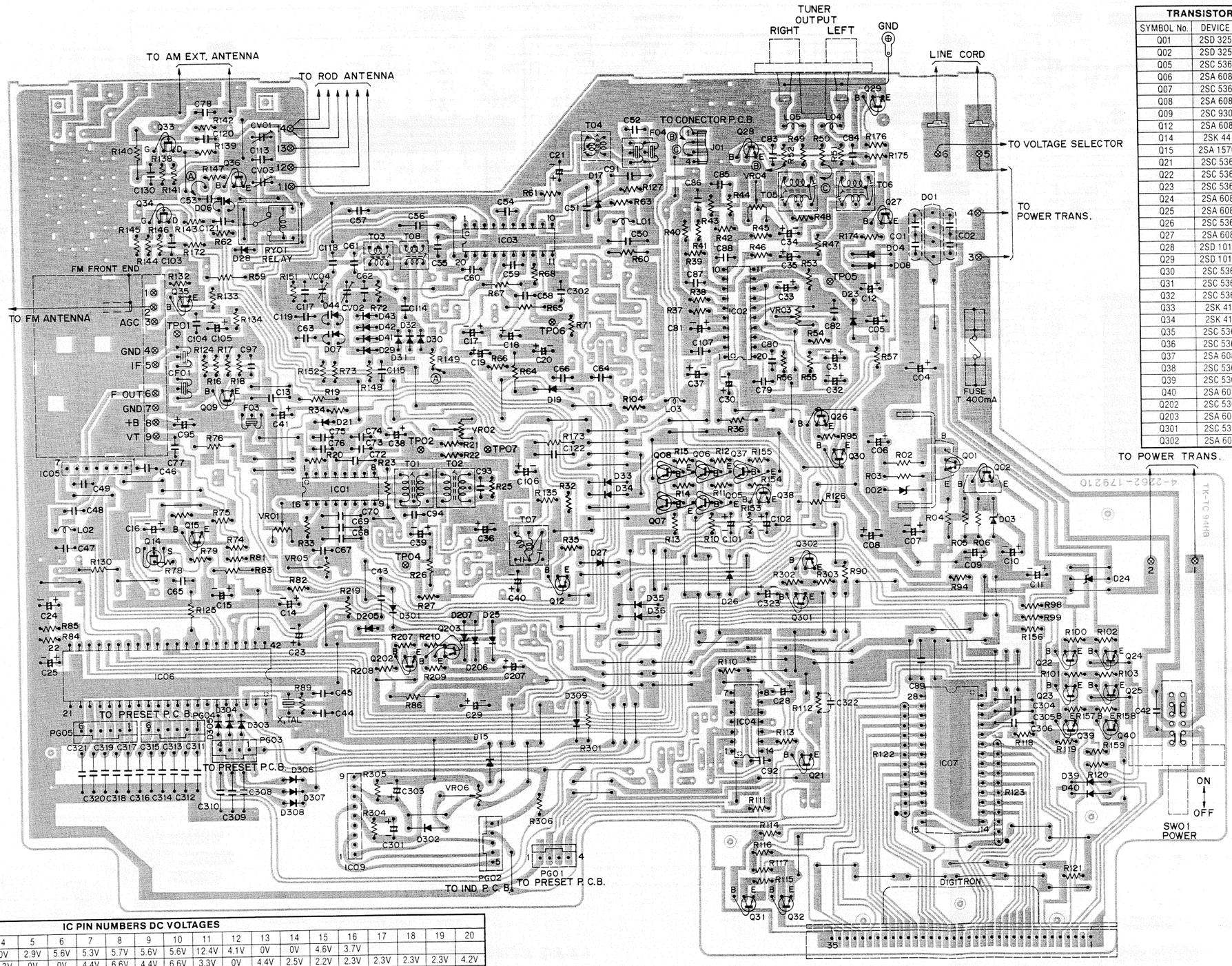
INDICATOR P.C.BOARD

(BOTTOM VIEW)



RF CONTROL PRINTED CIRCUIT BOARD

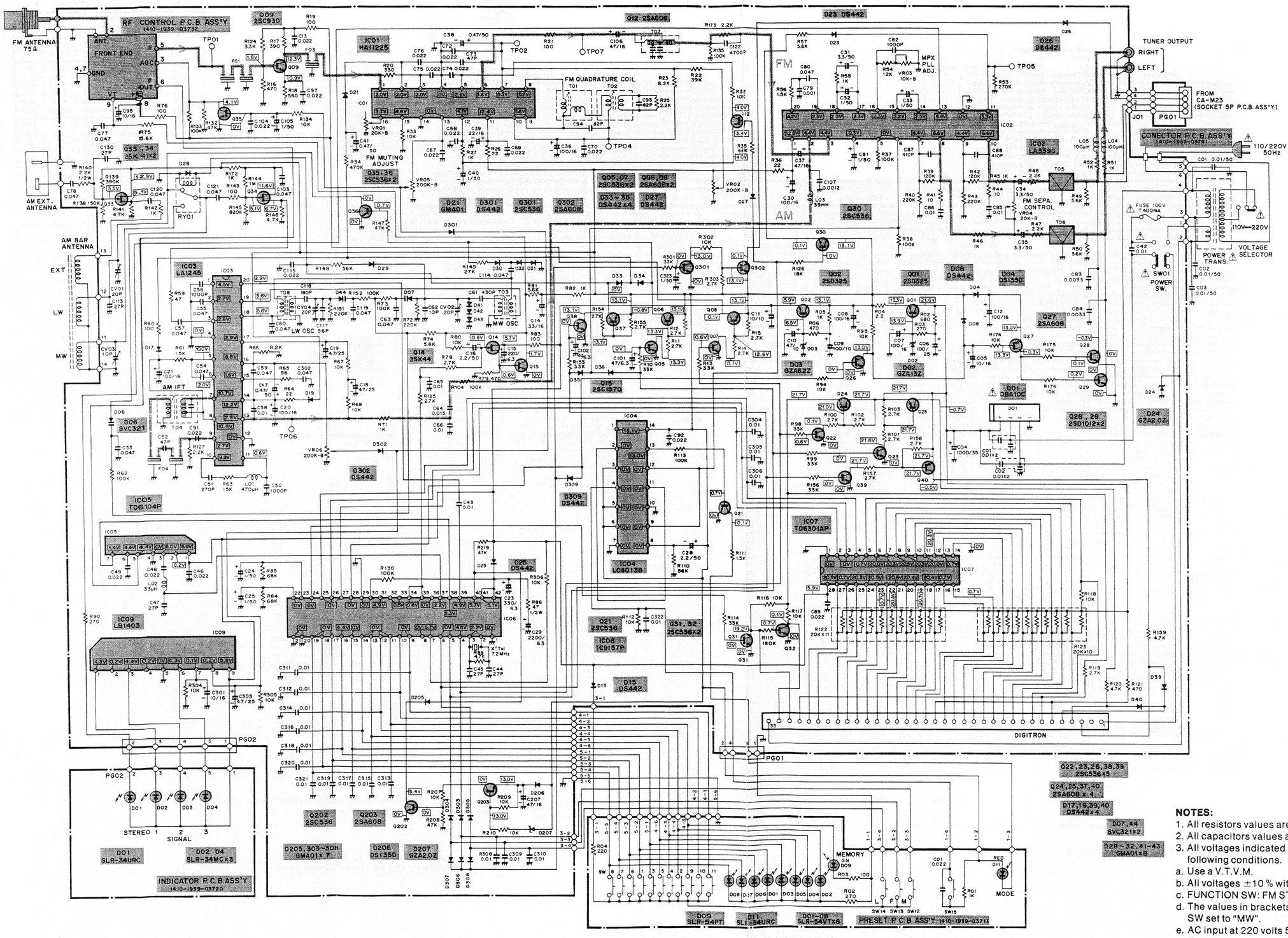
(BOTTOM VIEW)



TRANSISTOR DC VOLTAGES				
SYMBOL No.	DEVICE	B	C	E
Q01	2SD 325	13.9V	21.6V	13.3V
Q02	2SD 325	6.5V	13.1V	5.9V
Q05	2SC 536	0V	13.3V	0V
Q06	2SA 608	13.3V	−0.8V	13.1V
Q07	2SC 536	0.6V	0.1V	0V
Q08	2SA 608	12.6V	0.1V	13.1V
Q09	2SC 930	1.6V	12.3V	0.9V
Q12	2SA 608	3.4V	4.0V	4.0V
Q14	2SK 44	0.8V	5.7V	0.6V
Q15	2SA 1570	0.6V	1.7V	0V
Q21	2SC 536	0.7V	0.1V	0V
Q22	2SC 536	0.6V	0.1V	0V
Q23	2SC 536	0V	21.6V	0V
Q24	2SA 608	21.0V	21.7V	21.7V
Q25	2SA 608	21.7V	−0.7V	21.7V
Q26	2SC 536	0V	13.0V	0V
Q27	2SA 608	13.3V	−0.3V	13.0V
Q28	2SD 1012	0.1V	−0.3V	0V
Q29	2SD 1012	0.2V	0V	0V
Q30	2SC 536	0V	13.1V	0.1V
Q31	2SC 536	0V	19.2V	0V
Q32	2SC 536	0.7V	0.1V	0V
Q33	2SK 41	3.5V	12.9V	5.1V
Q34	2SK 41	5.1V	11.6V	6.7V
Q35	2SC 536	0V	4.1V	0V
Q36	2SC 536	0.7V	0V	0V
Q37	2SA 608	13.1V	0V	13.1V
Q38	2SC 536	0V	13.1V	0V
Q39	2SC 536	0V	21.7V	0V
Q40	2SA 608	21.7V	−0.5V	21.7V
Q202	2SC 536	0V	5.4V	0V
Q203	2SA 608	13.0V	0V	13.0V
Q301	2SC 536	0V	13.0V	0V
Q302	2SA 608	13.1V	0.1V	13.1V

IC PIN NUMBERS DC VOLTAGES																				
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
IC01	HA 11225	2.0V	2.0V	2.0V	0V	2.9V	5.6V	5.3V	5.7V	5.6V	5.6V	12.4V	4.1V	0V	0V	4.6V	3.7V				
IC02	LA 3390	12.6V	4.4V	4.4V	0.3V	0V	0V	4.4V	6.6V	4.4V	6.6V	3.3V	0V	4.4V	2.5V	2.2V	2.3V	2.3V	2.3V	2.3V	4.2V
IC03	LA 1245	4.5V	2.2V	2.8V	0V	10.0V	2.0V	10.7V	10.6V	2.7V	9.9V	0.6V	0V	2.9V	12.2V	1.6V	8.8V	2.9V	5.6V	5.6V	2.9V
IC04	LC 4013	13.1V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	13.0V	13.1V						
IC05	TD 6104 P	5.9V	0.2V	5.0V	0V	4.4V	4.4V	1.4V													
IC09	LB 1403	4.3V	0.2V	4.4V	0.2V	0V	4.3V	0.1V	0.2V	5.8V											

SCHEMATIC DIAGRAM



PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with ⚠, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual.
Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

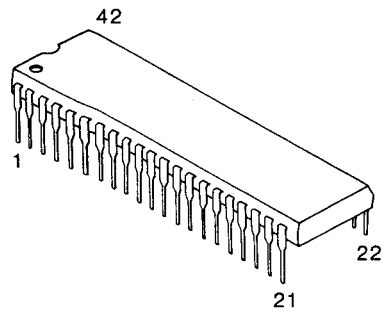
NOTES:

1. All resistors values are indicated in "ohm" (K=10^3, M=10^6).
2. All capacitors values are indicated in "μF" (P=10^{-12}).
3. All voltages indicated on the schematics are measured under the following conditions.
   a. Use a V.T.V.M.
   b. All voltages ±10 % with respect to chassis ground.
   c. FUNCTION SW: FM ST/MUTE Signal Stereo L.E.D. ON.
   d. The values in brackets show those obtained with FUNCTION SW set to "MW".
   e. AC input at 220 volts 50 Hz.
4. This is a basic schematic diagram.

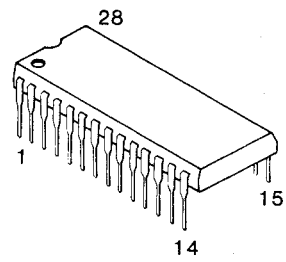
Because Fisher products are subject to continuous improvement, Fisher Corporation reserves the right to make any changes or modifications without notice.

SEMICONDUCTOR LEAD IDENTIFICATION

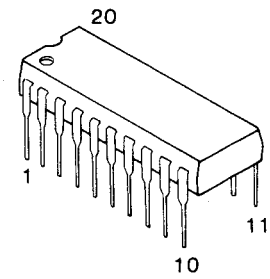
INTEGRATED CIRCUITS



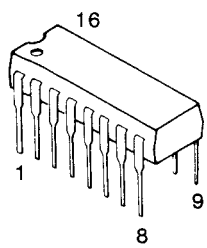
- TC 9147 AP



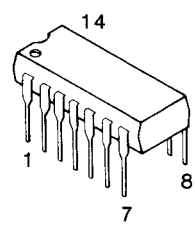
- TD 6301 AP



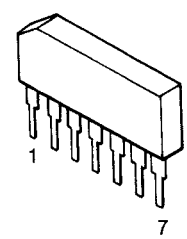
- LA 1245
- LA 3390



- HA 11225

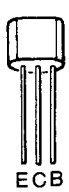


- LC 4013 B

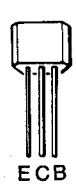


- TD 6104 P

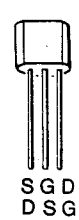
TRANSISTORS



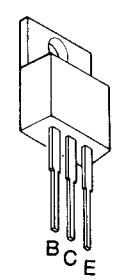
- 2SC 536
- 2SC 1570
- 2SC 930
- 2SC 3068
- 2SD 734
- 2SA 608



- 2SD 1012



- 2SK 44 C
- 2SK 41 F



- 2SD 325